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(L1 AND L2 AND L4).USPT,PGPB.	4

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L6

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<u>L5</u>	L1 AND L2 AND L3	2	<u>L5</u>
<u>L4</u>	silicone same rubber	47201	<u>L4</u>
<u>L3</u>	elastomer same layer	14153	<u>L3</u>
<u>L2</u>	perfluoropolymer same coating	91	<u>L2</u>
<u>L1</u>	(fibers or fibres) same reinforcement	17460	<u>L1</u>

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**Search Results - Record(s) 1 through 4 of 4 returned.**☐ 1. Document ID: US 20010034170 A1

L6: Entry 1 of 4

File: PGPB

Oct 25, 2001

PGPUB-DOCUMENT-NUMBER: 20010034170  
PGPUB-FILING-TYPE: new  
DOCUMENT-IDENTIFIER: US 20010034170 A1

TITLE: Non-curling reinforced composite membranes with differing opposed faces,  
methods for producing and their use in varied applications

PUBLICATION-DATE: October 25, 2001

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Keese, Frank M.	Cambridge	NY	US	

US-CL-CURRENT: 442/65; 442/103, 442/108, 442/67

## ABSTRACT:

A double-faced PTFE-silicone rubber reinforced composite with curling tendency controlled is achieved by coating one side of a balanced PTFE/glass composite with liquid silicone rubber. Each face of the composite can perform independent functions in a single application, thereby optimizing performance.

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KMC	Draw Desc	Image
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☐ 2. Document ID: US 5230937 A

L6: Entry 2 of 4

File: USPT

Jul 27, 1993

US-PAT-NO: 5230937  
DOCUMENT-IDENTIFIER: US 5230937 A

TITLE: Reinforced fluoropolymer composite

DATE-ISSUED: July 27, 1993

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Effenberger, John A.	Bennington	VT		
Keese, Frank M.	Hoosick Falls	NY		

US-CL-CURRENT: 428/113; 428/220, 428/378, 428/392, 428/421, 428/422, 442/261

## ABSTRACT:

A novel composite comprises a substrate having a coating matrix including an initial layer of a perfluoropolymer and an overcoat comprising a fluoroelastomer, a fluoroplastic, a fluoroelastomer/fluoroplastic blend, or a combination thereof. The perfluoropolymer in the initial layer may be a perfluoroplastic, a perfluoroelastomer, or blends thereof. In a separate embodiment, the novel composite includes a substrate coated solely with one or more layers of perfluoroelastomer alone or as a blend with a perfluoroplastic. Where the substrate is not susceptible to hydrogen fluoride corrosion, the composite may include solely one or more layers of a blend of a fluoroelastomer and a hydrogen-containing perfluoroplastic. Cross-linking accelerators may be used to cross-link one or more of the resins contained in the coating layers. Each composite may be top-coated with a layer or layers of a fluoroplastic, fluoroelastomer, and/or a blend thereof. The composite is flexible, exhibits good matrix cohesion and possesses substantial adhesion of the matrix to the material acting as the reinforcement or substrate. A method for making such a composite comprises the unique deployment of a perfluoropolymer directly onto the substrate in a relatively small amount sufficient to protect the substrate from chemical corrosion without impairing flexibility, followed by the application of the overcoat layer.

15 Claims, 5 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 3

Full	Title	Citation	Print	Review	Classification	Date	Reference	Sequences	Attachments
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Table	Draw Desc	Image
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 3. Document ID: US 4770927 A

L6: Entry 3 of 4

File: USPT

Sep 13, 1988

US-PAT-NO: 4770927

DOCUMENT-IDENTIFIER: US 4770927 A

TITLE: Reinforced fluoropolymer composite

DATE-ISSUED: September 13, 1988

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Effenger; John A.	Bennington	VT		
Keese; Frank M.	Hoosick Falls	NY		

US-CL-CURRENT: 442/126; 428/367, 428/375, 428/379, 428/383, 428/392, 428/394,  
428/395, 428/408, 428/421, 428/422

## ABSTRACT:

A novel composite comprises a substrate having a coating matrix including an initial layer of a perfluoropolymer and an overcoat comprising a fluoroelastomer, a fluoroplastic, a fluoroelastomer/fluoroplastic blend, or a combination thereof. The perfluoropolymer in the initial layer may be a perfluoroplastic, a perfluoroelastomer, or blends thereof. In a separate embodiment, the novel composite includes a substrate coated solely with one or more layers of perfluoroelastomer alone or as a blend with a perfluoroplastic. Where the substrate is not susceptible to hydrogen fluoride corrosion, the composite may include solely one or more layers of a blend of a fluoroelastomer and a hydrogen-containing perfluoroplastic. Cross-linking accelerators may be used to cross-link one or more of the resins contained in the coating layers. Each composite may be top-coated with a layer or

layers of a fluoroplastic, fluoroelastomer, and/or a blend thereof. The composite is flexible, exhibits good matrix cohesion and possesses substantial adhesion of the matrix to the material acting as the reinforcement or substrate. A method for making such a composite comprises the unique deployment of a perfluoropolymer directly onto the substrate in a relatively small amount sufficient to protect the substrate from chemical corrosion without impairing flexibility, followed by the application of the overcoat layer.

38 Claims, 5 Drawing figures  
Exemplary Claim Number: 1  
Number of Drawing Sheets: 3

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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RWC	Draw Desc	Image
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#### 4. Document ID: US 4610918 A

L6: Entry 4 of 4

File: USPT

Sep 9, 1986

US-PAT-NO: 4610918  
DOCUMENT-IDENTIFIER: US 4610918 A

TITLE: Novel wear resistant fluoropolymer-containing flexible composites

DATE-ISSUED: September 9, 1986

##### INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Effenberger; John A.	Bennington	VT		
Ribbans, III; Robert C.	Bennington	VT		
Keese; Frank M.	Hoosick Falls	NY		

US-CL-CURRENT: 442/68; 428/421, 428/422, 442/148, 442/72

##### ABSTRACT:

Fluoropolymer containing coatings are applied to substrates, preferably textile substrates, to obtain composites which are flexible and not brittle, and which exhibit a low coefficient of friction, good wear resistance and excellent release properties. This invention comprises the technique of initially coating a flexible substrate, such as glass fabric or a metal mesh, with a fluoropolymer, which serves to prevent cracking upon flexing. The precoated substrate is thereafter coated with a blend of a hard polymer and a fluoropolymer which adheres well to the pre-coated intermediate substrate. Significantly, the composites of the invention are flexible, yet possess the wear resistance of the hard polymer component as well as the frictional and release characteristics of the fluoropolymer components.

8 Claims, 0 Drawing figures  
Exemplary Claim Number: 1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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RWC	Draw Desc	Image
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Term	Documents
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(L1 AND L2 AND L4).USPT,PGPB.	4

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**Search Results - Record(s) 1 through 14 of 14 returned.**☐ 1. Document ID: US 6406605 B1

L1: Entry 1 of 14

File: USPT

Jun 18, 2002

US-PAT-NO: 6406605

DOCUMENT-IDENTIFIER: US 6406605 B1

TITLE: Electroosmotic flow controlled microfluidic devices

DATE-ISSUED: June 18, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Moles; Donald R.	Cedarville	OH		

US-CL-CURRENT: 204/601; 137/833, 204/451, 204/452, 204/454, 204/600, 251/129.06,  
422/100, 422/103, 422/99

## ABSTRACT:

In one embodiment, a fluidic module, such as a microfluidic module, has a fluid-flow channel, an electroosmotic flow membrane positioned in the channel, and a cathode located on one side and an anode located on the other side of the membrane so that an electrolyte in the channel is transported through the membrane in the presence of a voltage. In another embodiment, the channel has a port, a flexible and fluid-impermeable diaphragm is added, the electrolyte is contained in a reservoir, and the membrane moves the bladder which acts as a valve for fluid leaving the channel through the port. In a further embodiment, electrolyte in a first reservoir is transported through the membrane to move the bladder to force fluid out of a second reservoir.

20 Claims, 9 Drawing figures

Exemplary Claim Number: 6

Number of Drawing Sheets: 4

Full	Title	Distn	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	RWD	Draw Desc	Image
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☐ 2. Document ID: US 6230609 B1

L1: Entry 2 of 14

File: USPT

May 15, 2001

US-PAT-NO: 6230609

DOCUMENT-IDENTIFIER: US 6230609 B1

TITLE: Fluoropolymer diaphragm with integral attachment device

DATE-ISSUED: May 15, 2001

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Bender; Michael J.	Marengo	IL		
Fingar, Jr.; Richard E.	Carol Stream	IL		
Wucki; Rueben	late of Dundee	IL		

US-CL-CURRENT: 92/99; 92/103R

## ABSTRACT:

A pump diaphragm includes a layer fabricated from polytetrafluoroethylene (PTFE) and an integral stud. In one embodiment, the stud is encapsulated within a hub assembly fabricated from PTFE and fastened to the PTFE layer with adhesive or welding, etc. In alternate embodiments, the stud may be molded in-situ with the PTFE layer using various methodology, including pressing the stud onto a heated PTFE layer. The PTFE layer then may be subjected to various forming operations to provide the diaphragm with desired dimensions and/or properties. Moreover, an additional layer or layers, such as an elastomeric layer, may be laminated onto an inside surface of the PTFE layer to provide a composite pump diaphragm.

54 Claims, 27 Drawing figures

Exemplary Claim Number: 1,16

Number of Drawing Sheets: 17

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	ROC	Draw Desc	Image
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☐ 3. Document ID: US 6189435 B1

L1: Entry 3 of 14

File: USPT

Feb 20, 2001

US-PAT-NO: 6189435

DOCUMENT-IDENTIFIER: US 6189435 B1

TITLE: Diaphragm

DATE-ISSUED: February 20, 2001

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Vertanen; Mark W.	Creston	IA		
Lange; Shawn H.	Creston	IA		

US-CL-CURRENT: 92/103R; 92/103F, 92/103SD

## ABSTRACT:

A diaphragm for a turbo charger actuator includes a layer of fabric having upper and lower surfaces. A first layer of elastomeric material coats at least a portion of the upper surface of the fabric to prevent pressurized air from passing through. A second layer of elastomeric material coats at least a portion of the lower surface of the fabric to form a plurality of ribs thereon. The ribs reinforce the fabric and prevent dirt or other abrasive particles from wearing holes in the elastomeric material and the fabric. When the fabric has woven strands, the ribs protect some of the points where the strands intersect in key areas on the diaphragm.

15 Claims, 7 Drawing figures

Exemplary Claim Number: 1  
Number of Drawing Sheets: 4

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	NMC	Draw Desc	Image
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4. Document ID: US 6138550 A

L1: Entry 4 of 14

File: USPT

Oct 31, 2000

US-PAT-NO: 6138550  
DOCUMENT-IDENTIFIER: US 6138550 A

TITLE: Pump diaphragm and method for making the same

DATE-ISSUED: October 31, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Fingar, Jr.; Richard E.	Carol Stream	IL		
Bender; Michael J.	Marengo	IL		

US-CL-CURRENT: 92/103R; 92/103SD

ABSTRACT:

A composite pump diaphragm 10 includes a layer 12 fabricated from annealed polytetrafluoroethylene (PTFE) bonded to a layer 14 fabricated from an unreinforced thermoplastic elastomer including ethylene-propylene terpolymer (EPDM) and polypropylene. The diaphragm 10 is fabricated by chemically etching the PTFE layer 12, coating a surface thereof with a polyurethane adhesive, superimposing the layer 14 with layer 12 under heat and pressure, and allowing the superimposed layers to cure.

34 Claims, 2 Drawing figures  
Exemplary Claim Number: 1  
Number of Drawing Sheets: 1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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5. Document ID: US 6080472 A

L1: Entry 5 of 14

File: USPT

Jun 27, 2000

US-PAT-NO: 6080472  
DOCUMENT-IDENTIFIER: US 6080472 A

TITLE: Porous polytetrafluoroethylene molded article

DATE-ISSUED: June 27, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Huang; James	Taichung			TW
Chou; William	Taichung			TW
Chou; David	Taichung			TW
Kau; Jenn-Yuh	Taichung			TW
Cheng-Yang; Yui-Whei	Hsin Chu			TW
Lee; Woh-Jer	Taichung			TW

US-CL-CURRENT: 428/315.5; 428/319.1, 428/319.7, 428/903, 428/910

## ABSTRACT:

To provide a porous polytetrafluoroethylene sheet which has excellent cold flow resistance and is used suitably for gaskets and a highly densified polytetrafluoroethylene sheet which has high tensile strength and flex life and is used suitably for diaphragms. The porous polytetrafluoroethylene sheet is produced from a polytetrafluoroethylene material having a microstructure of nodes interconnected by fibrils and has MTS of from 3,000 to 12,000 psi and C.I. of 0.02 to 0.20 g/cc/psi. The highly densified polytetrafluoroethylene sheet is produced by compression-molding the porous polytetrafluoroethylene sheet and then sintering completely. The porous polytetrafluoroethylene sheet is also laminated with a sheet of other material to provide a composite polytetrafluoroethylene molded article.

21 Claims, 3 Drawing figures  
Exemplary Claim Number: 1  
Number of Drawing Sheets: 2

Full	Title	Claims	Front	Review	Classification	Date	Reference	Sequences	Attachments
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WWW	Draw Desc	Image
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 6. Document ID: US 6030694 A

L1: Entry 6 of 14

File: USPT

Feb 29, 2000

US-PAT-NO: 6030694

DOCUMENT-IDENTIFIER: US 6030694 A

TITLE: Rigid sheet polytetrafluoroethylene material

DATE-ISSUED: February 29, 2000

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Dolan; John W.	Boothwyn	PA		
Mills; David J.	Newark	DE		

US-CL-CURRENT: 428/212; 277/650, 277/651, 277/652, 277/654, 277/936, 277/945,  
277/946, 428/304.4, 428/315.5, 428/315.9, 428/316.6, 428/317.9, 428/319.3,  
428/319.7, 428/323, 428/421, 428/422, 428/66.4

## ABSTRACT:

A composite fluoropolymer material contains outer layers consisting essentially of conformable porous polytetrafluoroethylene (PTFE) and interior layers consisting essentially of rigid fluoropolymer material which may be a densified expanded PTFE, wherein the composite layers may optionally contain electrically conductive fillers. The composite is bonded together to form a sheet material that is sufficiently conformable to provide good seal between surfaces and is sufficiently rigid to make

the material easy to handle and install. The material of the present invention is particularly suitable for use as a gasket where rigidity is needed, customization or modification of gasket shape is desirable, and/or where a wide, even sealing surface is sought.

13 Claims, 5 Drawing figures  
Exemplary Claim Number: 1  
Number of Drawing Sheets: 2

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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NAME	Draw Desc	Image
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☐ 7. Document ID: US 5950523 A

L1: Entry 7 of 14

File: USPT

Sep 14, 1999

US-PAT-NO: 5950523  
DOCUMENT-IDENTIFIER: US 5950523 A

TITLE: Composite diaphragm having two layers wherein the first layer is chemically resistant and of reduced thickness in the area of flex of the body

DATE-ISSUED: September 14, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Reynolds; Steven M.	Lucas	OH		

US-CL-CURRENT: 92/98R; 92/103F, 92/103R, 92/103SD

ABSTRACT:

A composite flexible diaphragm for a diaphragm pump. The diaphragm has a diaphragm body with an outer perimeter, a center axis, and first and second exterior surfaces. The body has a perimeter flange portion extending around the body adjacent the outer perimeter. The body also has a disc portion extending radially outward from the center axis. The body has a convoluted flex portion disposed between the perimeter flange portion and the disc portion. The composite flexible diaphragm has a first layer of a chemically resistant material defining the first exterior surface. The diaphragm also has a second layer of flexible material which is bonded to the first layer and defines the second exterior surface of the diaphragm. The first layer of chemically resistant material has a reduced material thickness in the area of the flex portion of the diaphragm body.

35 Claims, 7 Drawing figures  
Exemplary Claim Number: 1,28  
Number of Drawing Sheets: 3

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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NAME	Draw Desc	Image
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☐ 8. Document ID: US 5907992 A

L1: Entry 8 of 14

File: USPT

Jun 1, 1999

US-PAT-NO: 5907992  
DOCUMENT-IDENTIFIER: US 5907992 A

TITLE: Abrasion resistant diaphragm

DATE-ISSUED: June 1, 1999

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Huss; Howard D.	Westmoreland City	PA		

US-CL-CURRENT: 92/103F; 92/103SD

## ABSTRACT:

The present invention provides an improved diaphragm which will substantially resist detrimental abrasive wear. Such diaphragm being used in certain applications in which at least a portion of such diaphragm moves relative to and is in contact with a nonflexing surface which would tend to abrade and excessively wear such diaphragm. Such diaphragm includes at least one layer of a flexible material. Such at least one layer of such flexible material being selected from a group consisting of EPDM, nitrites, neoprene, fluoroelastomers and various mixtures thereof. This layer of such flexible material has a first predetermined thickness. Such diaphragm further has at least a portion of such at least one layer of such flexible material disposed at least adjacent such nonflexing surface. This portion of the diaphragm has a second predetermined thickness. The second predetermined thickness being greater than such first predetermined thickness. The at least a portion of such at least one layer of flexible material is disposed at least adjacent such nonflexing surface and has such second predetermined thickness positioned on a predetermined side of such diaphragm. Such diaphragm also includes an aperture, having a predetermined diameter, formed through and substantially in a diametric center of such at least one layer of a flexible material and such at least a portion of such at least one layer of such flexible material having such second predetermined thickness.

18 Claims, 3 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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SMC	Draw Desc	Image
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☐ 9. Document ID: US 5879789 A

L1: Entry 9 of 14

File: USPT

Mar 9, 1999

US-PAT-NO: 5879789

DOCUMENT-IDENTIFIER: US 5879789 A

TITLE: Rigid sheet polytetrafluoroethylene gasket

DATE-ISSUED: March 9, 1999

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Dolan; John W.	Boothwyn	PA		
Mills; David J.	Newark	DE		

US-CL-CURRENT: 428/212, 277/650, 277/651, 277/652, 277/654, 277/936, 277/945, 277/946, 428/304.4, 428/315.5, 428/315.9, 428/316.6, 428/317.9, 428/319.3, 428/319.7, 428/323, 428/421, 428/422, 428/66.4

## ABSTRACT:

An improved, chemically resistant gasket is constructed from a composite containing outer layers consisting essentially of conformable expanded polytetrafluoroethylene (PTFE) and interior layers consisting essentially of a densified expanded PTFE, wherein the composite layers may optionally contain electrically conductive fillers. The composite is bonded together to form a sheet material that is sufficiently conformable to provide good seal between surfaces and is sufficiently rigid to make the material easy to handle and install. The material of the present invention is particularly suitable for use as a gasket where rigidity is needed, customization or modification of gasket shape is desirable, and/or where a wide, even sealing surface is sought.

5 Claims, 5 Drawing figures  
Exemplary Claim Number: 1  
Number of Drawing Sheets: 2

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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RMK	Draw Desc	Image
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 10. Document ID: US 5679425 A

L1: Entry 10 of 14

File: USPT

Oct 21, 1997

US-PAT-NO: 5679425  
DOCUMENT-IDENTIFIER: US 5679425 A

TITLE: Hose for fuel handling systems

DATE-ISSUED: October 21, 1997

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Plumley; Stephen	Paris	TN		

US-CL-CURRENT: 428/35.7; 138/126, 138/137, 138/141, 428/36.1, 428/36.8, 428/36.91,  
428/421

## ABSTRACT:

A laminated hose is present which is suitable for a fuel conducting hose or other hose, or diaphragm, used for example in an automotive vehicle, which structure is required to have excellent heat resistance and gasoline permeation resistance while maintaining suitable properties of bonding and flexibility. The hose is constituted by an inner veneer layer of THV, a terpolymer of tetrafluoroethylene, hexafluoropropylene and vinylidene fluoride, as a permeation barrier layer. This inner layer is reinforced by an elastomeric tie layer, a reinforcing layer and an elastomeric cover.

17 Claims, 1 Drawing figures  
Exemplary Claim Number: 1  
Number of Drawing Sheets: 1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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RMK	Draw Desc	Image
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☐ 11. Document ID: US 5560279 A

L1: Entry 11 of 14

File: USPT

Oct 1, 1996

US-PAT-NO: 5560279

DOCUMENT-IDENTIFIER: US 5560279 A

TITLE: Pre-failure sensing diaphragm

DATE-ISSUED: October 1, 1996

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Connors; William T.	Newark	DE		
Delaney, III; William E.	Hockessin	DE		
Kirk; Kevin J.	Elkton	MD		

US-CL-CURRENT: 92/5R; 417/63, 92/103SD

## ABSTRACT:

A combined sensing and barrier element is provided. This sensing element is most useful as a flexible diaphragm which is also described herein. The flexible diaphragm has a resilient elastomeric body and a sensing element having at least one conductive component and at least two nonconductive components such that the conductive component is positioned between the nonconductive components. A change in electrical resistance is recorded by an electrical monitoring device that is electrically connected to the conductive component. By observing changes in the resistance that deviate from a predetermined norm, significant wear of a diaphragm can be determined prior to its failure.

19 Claims, 7 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 7

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KOMC	Draw Desc	Image
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☐ 12. Document ID: US 5352506 A

L1: Entry 12 of 14

File: USPT

Oct 4, 1994

US-PAT-NO: 5352506

DOCUMENT-IDENTIFIER: US 5352506 A

TITLE: Diaphragm

DATE-ISSUED: October 4, 1994

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Sowa; Nobuhiro	Kawachinagano			JP

US-CL-CURRENT: 428/64.1; 181/166, 181/167, 181/170

## ABSTRACT:

The invention is intended to improve the durability and durability of a diaphragm of centrally convex form. A diaphragm comprises a substantially circular woven base fabric (1) formed of warp yarns (1a and 1a') radially extending in centrally convex form from the central region and weft yarns (1b) helically interwoven with the warp yarns (1a), and a rubber member (2) of centrally convex membrane form molded integrally with the base fabric (1).

3 Claims, 3 Drawing figures  
Exemplary Claim Number: 1  
Number of Drawing Sheets: 3

Full	Title	Class	Front	Review	Classification	Date	Reference	Sequences	Attachments
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☐ 13. Document ID: US 5349896 A

L1: Entry 13 of 14

File: USPT

Sep 27, 1994

US-PAT-NO: 5349896  
DOCUMENT-IDENTIFIER: US 5349896 A

TITLE: Pump diaphragm

DATE-ISSUED: September 27, 1994

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Delaney, III; William E.	Hockessin	DE		
Connelly, Jr.; John M.	Rising Sun	MD		
Sicker; Fred C.	Newark	DE		

US-CL-CURRENT: 92/98R; 92/103F, 92/103R, 92/103SD

ABSTRACT:

A flexible pump diaphragm for pumping fluids is described in which the diaphragm has a number of ribs or troughs located radially across its circumferential flexure portion.

1 Claims, 6 Drawing figures  
Exemplary Claim Number: 1  
Number of Drawing Sheets: 3

Full	Title	Class	Front	Review	Classification	Date	Reference	Sequences	Attachments
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ROAD	Draw Desc	Image
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☐ 14. Document ID: US 5217797 A

L1: Entry 14 of 14

File: USPT

Jun 8, 1993

US-PAT-NO: 5217797  
DOCUMENT-IDENTIFIER: US 5217797 A

TITLE: Chemically resistant diaphragm

DATE-ISSUED: June 8, 1993

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Knox; John B.	Wilmington	DE		
Connelly, Jr.; John M.	Rising Sun	MD		

US-CL-CURRENT: 428/167; 428/421, 428/422, 442/334, 442/397, 92/103F, 92/103SD

## ABSTRACT:

A composite diaphragm containing a flexible composite of a flexible polymer and an expanded polytetrafluoroethylene fabric on which is adhered to one surface a solid polytetrafluoroethylene layer. Additionally a composite diaphragm is disclosed which has a concentrically arranged ribbed elastomeric layer attached to a solid polytetrafluoroethylene layer.

13 Claims, 5 Drawing figures  
Exemplary Claim Number: 1  
Number of Drawing Sheets: 2

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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**WEST**[Generate Collection](#)[Print](#)**Search Results - Record(s) 1 through 18 of 18 returned.**☐ **1. Document ID: US 6417280 B2**

L2: Entry 1 of 18

File: USPT

Jul 9, 2002

US-PAT-NO: 6417280

DOCUMENT-IDENTIFIER: US 6417280 B2

TITLE: Fluoropolymeric composition

DATE-ISSUED: July 9, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Effenberger; John A.	Bedford	NH		
Comeaux; Christopher M.	Merrimack	NH		
David; Lawrence D.	Dover	NH		
Pollock; Timothy P.	Manchester	NH		
Sahlin; Katherine M.	Somerville	MA		
Socha; Laura A.	Westford	MA		
Stone; Richard L.	Manchester	NH		
Verbicky; John W.	York Beach	ME		

US-CL-CURRENT: 525/199, 523/206, 523/223, 524/401, 524/439, 524/520, 524/544,  
524/545, 525/200, 525/205, 525/206, 525/326.2, 525/326.3

## ABSTRACT:

A blended solid composition is provided containing a fibrillatable microparticulate PTFE polymer in an unfibrillated state and at least one elastomeric and/or fluoroplastic component. The composition is useful in making microfiber-reinforced solid compositions and articles produced therefrom.

14 Claims, 56 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 35

[Full](#) [Title](#) [Citation](#) [Front](#) [Review](#) [Classification](#) [Date](#) [Reference](#) [Sequences](#) [Attachments](#)[NWC](#) [Draw Desc](#) [Image](#)☐ **2. Document ID: US 6306781 B1**

L2: Entry 2 of 18

File: USPT

Oct 23, 2001

US-PAT-NO: 6306781

DOCUMENT-IDENTIFIER: US 6306781 B1

TITLE: Expansion joint patch apparatus

DATE-ISSUED: October 23, 2001

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
McGrath; David F.	Garden Ridge	TX		

US-CL-CURRENT: 442/149; 156/94, 29/402.03, 29/402.09, 427/140, 428/144, 428/145,  
428/149, 428/293.4, 428/36.1, 442/104, 442/129, 442/155, 442/157, 442/168, 442/170,  
442/173, 442/174, 442/180, 442/69, 442/88, 442/92

## ABSTRACT:

An expansion joint patch apparatus for repairing failed or torn expansion joint belting having a substantially flat, woven substrate material, and a cured solution of suspended elastomer, coating the substrate material. The substrate material is selected from the group consisting of aramid, fiberglass, corrosion resistant alloy wire, polyester, ceramic and kevlar fabrics. The elastomer material is selected from the group consisting of chloroprene, chlorosulfonated polyethylene, ethylene propylene, chlorinated isobutylene isoprene, fluoroelastomers and silicone rubbers. The invention further includes a method for forming a fluoroelastomer patch for repairing fabric expansion joints.

3 Claims, 7 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 2

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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 3. Document ID: US 6277346 B1

L2: Entry 3 of 18

File: USPT

Aug 21, 2001

US-PAT-NO: 6277346

DOCUMENT-IDENTIFIER: US 6277346 B1

TITLE: Photocatalyst composite and process for producing the same

DATE-ISSUED: August 21, 2001

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Murasawa; Sadao	Kusatsu			JP
Murakami; Hajime	Kusatsu			JP
Fukui; Yasuro	Kusatsu			JP
Watanabe; Mitsuru	Kusatsu			JP
Fujishima; Akira	Kawasaki-shi			JP
Hashimoto; Kazuhito	Yokohama-shi			JP

US-CL-CURRENT: 423/239.2; 423/239.1, 502/300, 502/326, 502/329, 502/330, 502/350,  
502/353

## ABSTRACT:

A photocatalyst composite is provided which comprise a substrate having particles of a photocatalyst such as titanium oxide, adhered thereon via a less degradative adhesive such as a fluorinated polymer comprising a copolymer of a vinyl ester

and/or vinyl ether and a fluoroolefin, or a silicon based polymer or cement. Furthermore, a process for producing the photocatalyst composite and a coating composition containing the photocatalyst composite are provided.

5 Claims, 1 Drawing figures  
Exemplary Claim Number: 1  
Number of Drawing Sheets: 1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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MMC	Draw Desc	Image
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☐ 4. Document ID: US 6239223 B1

L2: Entry 4 of 18

File: USPT

May 29, 2001

US-PAT-NO: 6239223

DOCUMENT-IDENTIFIER: US 6239223 B1

TITLE: Fluoropolymeric composition

DATE-ISSUED: May 29, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Effenberger; John A.	Bedford	NH		
Comeaux; Christopher M.	Merrimack	NH		
David; Lawrence D.	Dover	NH		
Pollock; Timothy P.	Manchester	NH		
Sahlin; Katherine M.	Somerville	MA		
Socha; Laura A.	Westford	MA		
Stone; Richard L.	Manchester	NH		
Verbicky; John W.	York Beach	ME		

US-CL-CURRENT: 525/199, 523/200, 523/205, 523/206, 523/223, 524/401, 524/439,  
524/520, 524/544, 524/545, 525/326.2, 525/326.3

ABSTRACT:

A blended solid composition is provided containing a fibrillatable microparticulate PTFE polymer in an unfibrillated state and at least one elastomeric and/or fluoroplastic component. The composition is useful in making microfiber-reinforced solid compositions and articles produced therefrom.

19 Claims, 56 Drawing figures  
Exemplary Claim Number: 1  
Number of Drawing Sheets: 35

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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MMC	Draw Desc	Image
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☐ 5. Document ID: US 6216842 B1

L2: Entry 5 of 18

File: USPT

Apr 17, 2001

US-PAT-NO: 6216842

DOCUMENT-IDENTIFIER: US 6216842 B1

TITLE: Object conveying surface with liner and method of applying the liner to the surface

DATE-ISSUED: April 17, 2001

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Beale; Scott Andrew	Clifton Park	NY		
Ritter; James Michael	Bennington	VT		

US-CL-CURRENT: 193/20; 193/2R, 193/22

## ABSTRACT:

A non-stick liner for facilitating the transport of objects along a stationary transport substrate comprises a fabric coated with PTFE, or a laminate of multiple layers of fabric coated with PTFE. The laminate may include a conductive material to dissipate electrical charge buildup. The liner may be selectively applied to identified portions of a stationary transport substrate where buildup, blocking, bridging, or sticking of objects has or is likely to occur. The liner may be mechanically fastened or adhesively bonded to the stationary transport substrate.

35 Claims, 23 Drawing figures  
Exemplary Claim Number: 6  
Number of Drawing Sheets: 7

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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☐ 6. Document ID: US 6196370 B1

L2: Entry 6 of 18

File: USPT

Mar 6, 2001

US-PAT-NO: 6196370

DOCUMENT-IDENTIFIER: US 6196370 B1

TITLE: Package conveying surface with liner

DATE-ISSUED: March 6, 2001

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Beale; Scott Andrew	Clifton Park	NY		
Ritter; James Michael	Bennington	VT		

US-CL-CURRENT: 193/2R; 193/22, 193/37

## ABSTRACT:

A chute for supporting and facilitating transport of packages has a skived PTFE film adhesively bonded to a transport substrate. A pressure sensitive adhesive is pre-formed on and bonded to an entire surface of a first side of said skived PTFE film. Prior to installation, a release liner covers the adhesive. After the release liner is removed, the skived PTFE film with the pre-formed adhesive is attached to the substrate through the application of pressure to an opposite side of the film. The exposed opposite side of the film provides a lubricious transport surface on

which packages move continuously without build-up. The film has a thickness which accommodates significant abrasion wear over time while continuing to provide a lubricious transport surface. The skived PTFE film may contain a carbon filler to prevent static electric build-up. The film can be applied over the whole transport substrate or only to wear paths.

30 Claims, 15 Drawing figures  
Exemplary Claim Number: 1  
Number of Drawing Sheets: 4

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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CMC	Draw Desc	Image
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☐ 7. Document ID: US 6184333 B1

L2: Entry 7 of 18

File: USPT

Feb 6, 2001

US-PAT-NO: 6184333  
DOCUMENT-IDENTIFIER: US 6184333 B1

TITLE: Low-toxicity, high-temperature polyimides

DATE-ISSUED: February 6, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Gray; Robert A.	Cincinnati	OH		

US-CL-CURRENT: 528/170; 525/420, 525/422, 528/125, 528/128, 528/171, 528/172,  
528/173, 528/174, 528/176, 528/183, 528/185, 528/188, 528/220, 528/229, 528/350,  
528/353

ABSTRACT:

The present invention is directed to polyimide systems which simultaneously offer low toxicity, a high glass transition temperature, excellent thermal oxidative stability, and desirable processing characteristics. These various polyimide systems include mixtures of monomeric reactants, polyimide-precursor reaction products, polyimides, and polyimide-containing articles. In one aspect of the invention, the mixture of monomeric reactants includes at least one dia-nhydride or a derivative thereof, and at least one diamine. The diamine may be 4,4'-[1,4-phenylene-bis(1-methylethylidene)]bis(aniline), 4,4'-[1,3-phenylene-bis(1-methylethylidene)]bis(aniline), and/or a derivative thereof. The diamine also may include a phenylenediamine, 2,2-bis[4-(4-aminophenoxy)phenyl]propane, 4,4'-(1,4-phenylene-bismethylene)bis(aniline), and/or a derivative thereof. In addition, the mixture may include a reactive end-capping agent and/or a non-reactive end-capping agent. Also, if desired, the mixture of monomeric reactants may be a dry mix or a solution. The invention also is directed to articles formed from mixtures of monomeric reactants, articles formed from polyimide-precursor reaction products, and articles formed from polyimides themselves. Non-limiting examples include a powder, a neat resin, a coating, a film, a membrane, a foam, an adhesive, a fiber, a composite, a laminate, a prepreg, a part, and a bushing.

57 Claims, 11 Drawing figures  
Exemplary Claim Number: 1  
Number of Drawing Sheets: 2

Full	Title	Class	Print	Review	Classification	Date	Reference	Sequences	Attachments
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☐ 8. Document ID: US 6169139 B1

L2: Entry 8 of 18

File: USPT

Jan 2, 2001

US-PAT-NO: 6169139

DOCUMENT-IDENTIFIER: US 6169139 B1

TITLE: Fluoroelastomer latex

DATE-ISSUED: January 2, 2001

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
van Cleeff; Albertus	Wilmington	DE		

US-CL-CURRENT: 524/544

## ABSTRACT:

A fluoroelastomer latex is produced that is capable of forming films having excellent water resistance. In a first step, polymerization of fluorinated monomers is carried out in the presence of fluorinated surfactants at a pH of 3-8. The pH of the resultant fluoroelastomer emulsion composition is then adjusted to 5-9 and the emulsion is concentrated to yield a solids-rich latex.

9 Claims, 0 Drawing figures

Exemplary Claim Number: 1

Full	Title	Class	Print	Review	Classification	Date	Reference	Sequences	Attachments
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☐ 9. Document ID: US 6080671 A

L2: Entry 9 of 18

File: USPT

Jun 27, 2000

US-PAT-NO: 6080671

DOCUMENT-IDENTIFIER: US 6080671 A

TITLE: Process of chemical-mechanical polishing and manufacturing an integrated circuit

DATE-ISSUED: June 27, 2000

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Crevasse; Annette Margaret	Orlando	FL		
Crevasse; Brian David	Apopaa	FL		
Easter; William Graham	Orlando	FL		
Maze, III; John Albert	Orlando	FL		

US-CL-CURRENT: 438/691; 438/692, 438/693

## ABSTRACT:

A polishing process to planarize a layer formed on a substrate and to reduce the variations in the thickness of that layer from substrate to substrate. The polishing process is implemented by polishing a substrate using a stable pad material. A stable pad material is formed from a polishing material that has substantially the same or similar density, hardness, and compressibility as polyurethane but is a material other than or substantially other than polyurethane. In an alternative embodiment, the material for the polishing pad may be selected for its compression, high tensile strength, wear resistance and/or resistance to water, diluted acids, and alkalis. In a further alternative embodiment, the material forming the polishing pad may be selected from the group comprising hydrogenated nitrile compounds, fluoroelastomers, or perfluoroelastomers.

9 Claims, 3 Drawing figures  
Exemplary Claim Number: 1  
Number of Drawing Sheets: 2

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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 10. Document ID: US 6025460 A

L2: Entry 10 of 18

File: USPT

Feb 15, 2000

US-PAT-NO: 6025460  
DOCUMENT-IDENTIFIER: US 6025460 A

TITLE: Polyamide precursor

DATE-ISSUED: February 15, 2000

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Mazany; Anthony M.	Akron	OH		
Prybyla; Stanley G.	Brecksville	OH		

US-CL-CURRENT: 528/353; 528/125, 528/126, 528/128, 528/170, 528/172, 528/173,  
528/176, 528/185, 528/188, 528/220, 528/229, 528/350

## ABSTRACT:

The service life of fiber-reinforced polyimide composites in a high temperature oxidative environment is extended by coating with a polyimide coating precursor solution that is synthesized by reacting an aromatic dianhydride with an aromatic diamine in a non-reactive solvent. The reactive solution is heated to a temperature sufficient to reduce its viscosity prior to its use as a coating. Preferably, a mixture of meta-phenylenediamine and para-phenylenediamine is reacted with biphenyldianhydride in n-methyl pyrrolidinone solvent and thereafter heated to between about 50.degree. C. (122.degree. F.) and 150.degree. C. (302.degree. F.) under nitrogen while stirring for a time sufficient to obtain a polyamic acid polyimide precursor coating solution having a Brookfield viscosity of from about 500 to about 5000 cP and a solids content of from about 5 to about 35 weight percent.

43 Claims, 0 Drawing figures  
Exemplary Claim Number: 1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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RWD	Draw Desc	Image
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☐ 11. Document ID: US 5920671 A

L2: Entry 11 of 18

File: USPT

Jul 6, 1999

US-PAT-NO: 5920671

DOCUMENT-IDENTIFIER: US 5920671 A

TITLE: Signal transmission assembly having reduced-friction and concentrated load distribution element for synthetic strength members

DATE-ISSUED: July 6, 1999

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Smith; John David	Cedar Creek	TX		

US-CL-CURRENT: 385/102; 385/103, 385/113

## ABSTRACT:

An improved cable assembly is provided having a signal transmission core. A first jacket is disposed about the signal transmission core. A first strength member array is disposed about the first jacket. The strength member array is defined by at least two synthetic fibrous strength members which are each comprised of a plurality of filaments. Each strength member is disposed within an individual friction reducing layer. A second jacket is disposed about the strength member array.

10 Claims, 5 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 2

Full	Title	Class	Front	Review	Classification	Date	Reference	Sequences	Attachments
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☐ 12. Document ID: US 5764835 A

L2: Entry 12 of 18

File: USPT

Jun 9, 1998

US-PAT-NO: 5764835

DOCUMENT-IDENTIFIER: US 5764835 A

TITLE: Fluoropolymer fiber reinforced integral composite cable jacket and tubing

DATE-ISSUED: June 9, 1998

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Rubin; Edward A.	Phoenix	AZ		
Irwin; Craig W.	Tempe	AZ		
Farnsworth; Ted R.	Phoenix	AZ		

US-CL-CURRENT: 385/104

## ABSTRACT:

An improved integral composite cable jacket or tubing is disclosed wherein a fluoropolymer fiber array is disposed between a first and second elastomer jacket layer. At least one of the elastomer jacket layers is comprised of silicone. The first and second elastomer jacket layers are bonded together through predetermined open spaces defined by the fiber array.

18 Claims, 4 Drawing figures  
Exemplary Claim Number: 1  
Number of Drawing Sheets: 2

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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☐ 13. Document ID: US 5716677 A

L2: Entry 13 of 18

File: USPT

Feb 10, 1998

US-PAT-NO: 5716677

DOCUMENT-IDENTIFIER: US 5716677 A

TITLE: Protective coatings for polyimide composites

DATE-ISSUED: February 10, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Mazany; Anthony M.	Akron	OH		
Prybyla; Stanley G.	Brecksville	OH		

US-CL-CURRENT: 427/393.5; 427/377, 427/379

ABSTRACT:

The service life of fiber-reinforced polyimide composites in a high temperature oxidative environment is extended by coating with a polyimide coating precursor solution that is synthesized by reacting an aromatic dianhydride with an aromatic diamine in a non-reactive solvent. The reactive solution is heated to a temperature sufficient to reduce its viscosity prior to its use as a coating. Preferably, a mixture of meta-phenylenediamine and para-phenylenediamine is reacted with biphenyldianhydride in n-methyl pyrrolidinone solvent and thereafter heated to between about 50.degree. C. (122.degree. F.) and 150.degree. C. (302.degree. F.) under nitrogen while stirring for a time sufficient to obtain a polyamic acid polyimide precursor coating solution having a Brookfield viscosity of from about 500 to about 5000 cP and a solids content of from about 5 to about 35 weight percent.

33 Claims, 0 Drawing figures  
Exemplary Claim Number: 1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KMC	Draw Desc	Image
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☐ 14. Document ID: US 5706382 A

L2: Entry 14 of 18

File: USPT

Jan 6, 1998

US-PAT-NO: 5706382

DOCUMENT-IDENTIFIER: US 5706382 A

TITLE: Signal transmission assembly having reduced-friction and concentrated load distribution element for synthetic strength members

DATE-ISSUED: January 6, 1998

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Smith; J. David	Cedar Creek	TX		

US-CL-CURRENT: 385/102; 385/103, 385/113

## ABSTRACT:

An improved cable assembly is provided which comprises covered, wrapped, or coated synthetic strength members to enhance the mechanical properties of the cable in a dynamic environment.

16 Claims, 5 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 2

Full	Title	Display	Front	Review	Classification	Date	Reference	Sequences	Attachments
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☐ 15. Document ID: US 5679444 A

L2: Entry 15 of 18

File: USPT

Oct 21, 1997

US-PAT-NO: 5679444

DOCUMENT-IDENTIFIER: US 5679444 A

TITLE: Method for producing multi-layer circuit board and resulting article of manufacture

DATE-ISSUED: October 21, 1997

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Davis; Charles Robert	Wappingers Falls	NY		
Gall; Thomas P.	Lancaster	NY		

US-CL-CURRENT: 428/209; 174/256, 174/259, 361/748, 361/750, 428/317.1, 428/317.5, 428/317.9, 428/344, 428/421, 428/901

## ABSTRACT:

A method for producing a panel of a multi-layer electronic circuit package and resulting article of manufacture is provided comprising the steps of coating a circuitized core material that has been cut into panels with a dielectric material and copper cover sheets; forming circuits from the cover sheets by etching; applying an adhesive polymer across the dielectric material covering the entire area of the panel; applying a cover sheet; drilling the panel to form through-holes and vias; seeding and plating the through-holes and vias with joining metal; applying photo-resist to the panels exposed with an image of the area of the panel to be joined and developed; and etching the cover sheet and the photo-resist away in the area of the panel to be joined to expose the adhesive polymer.

5 Claims, 2 Drawing figures  
Exemplary Claim Number: 1  
Number of Drawing Sheets: 2

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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☐ 16. Document ID: US 5547823 A

L2: Entry 16 of 18

File: USPT

Aug 20, 1996

US-PAT-NO: 5547823  
DOCUMENT-IDENTIFIER: US 5547823 A

TITLE: Photocatalyst composite and process for producing the same

DATE-ISSUED: August 20, 1996

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP	CODE	COUNTRY
Murasawa; Sadao	Kusatsu				JP
Murakami; Hajime	Kusatsu				JP
Fukui; Yasuro	Kusatsu				JP
Watanabe; Mitsuru	Kusatsu				JP
Fujishima; Akira	Nakahara-ku, Kawasaki-shi				JP
Hashimoto; Kazuhito	Kosugayacho, Sakae-ku, Yokohama-shi				JP

US-CL-CURRENT: 430/531; 204/155, 210/763, 252/600, 427/126.5, 427/126.6, 427/212,  
427/216, 427/217, 430/947, 430/950

ABSTRACT:

A photocatalyst composite is provided which comprise a substrate having particles of a photocatalyst such as titanium oxide, adhered thereon via a less degradative adhesive such as a fluorinated polymer comprising a copolymer of a vinyl ester and/or vinyl ether and a fluoroolefin, or a silicon based polymer or cement. Furthermore, a process for producing the photocatalyst composite and a coating composition containing the photocatalyst composite are provided.

6 Claims, 1 Drawing figures  
Exemplary Claim Number: 1  
Number of Drawing Sheets: 1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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☐ 17. Document ID: US 5368923 A

L2: Entry 17 of 18

File: USPT

Nov 29, 1994

US-PAT-NO: 5368923  
DOCUMENT-IDENTIFIER: US 5368923 A

TITLE: Laminated composite with adhesive carrier element

DATE-ISSUED: November 29, 1994

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Tippett; Stephen W.	Bedford	NH		

US-CL-CURRENT: 442/45; 156/306.6, 156/313, 428/340, 428/341, 428/421, 428/422,  
442/254, 442/289

## ABSTRACT:

A laminated composite comprising first and second components, and a bonding interlayer interposed between the first and second components. The bonding interlayer includes a non-fluoroplastic carrier element coated with a fluoroplastic which melts under conditions of elevated temperature and pressure to effect a bond between the first and second components. The tensile strength of the carrier element is less than the combined tensile strengths of any substrates included in the first and second components.

12 Claims, 1 Drawing figures  
Exemplary Claim Number: 1  
Number of Drawing Sheets: 1

Full	Title	Classen	Front	Review	Classification	Date	Reference	Sequences	Attachments
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☒ 18. Document ID: US 5230937 A

L2: Entry 18 of 18

File: USPT

Jul 27, 1993

US-PAT-NO: 5230937DOCUMENT-IDENTIFIER: US 5230937 A

TITLE: Reinforced fluoropolymer composite

DATE-ISSUED: July 27, 1993

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Effenberger; John A.	Bennington	VT		
Keese; Frank M.	Hoosick Falls	NY		

US-CL-CURRENT: 428/113; 428/220, 428/378, 428/392, 428/421, 428/422, 442/261

## ABSTRACT:

A novel composite comprises a substrate having a coating matrix including an initial layer of a perfluoropolymer and an overcoat comprising a fluoroelastomer, a fluoroplastic, a fluoroelastomer/fluoroplastic blend, or a combination thereof. The perfluoropolymer in the initial layer may be a perfluoroplastic, a perfluoroelastomer, or blends thereof. In a separate embodiment, the novel composite includes a substrate coated solely with one or more layers of perfluoroelastomer alone or as a blend with a perfluoroplastic. Where the substrate is not susceptible to hydrogen fluoride corrosion, the composite may include solely one or more layers of a blend of a fluoroelastomer and a hydrogen-containing perfluoroplastic. Cross-linking accelerators may be used to cross-link one or more of the resins contained in the coating layers. Each composite may be top-coated with a layer or layers of a fluoroplastic, fluoroelastomer, and/or a blend thereof. The composite is

flexible, exhibits good matrix cohesion and possesses substantial adhesion of the matrix to the material acting as the reinforcement or substrate. A method for making such a composite comprises the unique deployment of a perfluoropolymer directly onto the substrate in a relatively small amount sufficient to protect the substrate from chemical corrosion without impairing flexibility, followed by the application of the overcoat layer.

15 Claims, 5 Drawing figures  
Exemplary Claim Number: 1  
Number of Drawing Sheets: 3

Full Title Citation Prior Review Classification Date Reference Sequences Attachments

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L5

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<u>L5</u>	L1 AND L2 AND L3	2	<u>L5</u>
<u>L4</u>	silicone same rubber	47201	<u>L4</u>
<u>L3</u>	elastomer same layer	14153	<u>L3</u>
<u>L2</u>	perfluoropolymer same coating	91	<u>L2</u>
<u>L1</u>	(fibers or fibres) same reinforcement	17460	<u>L1</u>

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**Search Results - Record(s) 1 through 2 of 2 returned.**☒ 1. Document ID: US 5230937 A

L1: Entry 1 of 2

File: USPT

Jul 27, 1993

US-PAT-NO: 5230937

DOCUMENT-IDENTIFIER: US 5230937 A

TITLE: Reinforced fluoropolymer composite

DATE-ISSUED: July 27, 1993

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Effenger; John A.	Bennington	VT		
Keese; Frank M.	Hoosick Falls	NY		

US-CL-CURRENT: 428/113; 428/220, 428/378, 428/392, 428/421, 428/422, 442/261

## ABSTRACT:

A novel composite comprises a substrate having a coating matrix including an initial layer of a perfluoropolymer and an overcoat comprising a fluoroelastomer, a fluoroplastic, a fluoroelastomer/fluoroplastic blend, or a combination thereof. The perfluoropolymer in the initial layer may be a perfluoroplastic, a perfluoroelastomer, or blends thereof. In a separate embodiment, the novel composite includes a substrate coated solely with one or more layers of perfluoroelastomer alone or as a blend with a perfluoroplastic. Where the substrate is not susceptible to hydrogen fluoride corrosion, the composite may include solely one or more layers of a blend of a fluoroelastomer and a hydrogen-containing perfluoroplastic. Cross-linking accelerators may be used to cross-link one or more of the resins contained in the coating layers. Each composite may be top-coated with a layer or layers of a fluoroplastic, fluoroelastomer, and/or a blend thereof. The composite is flexible, exhibits good matrix cohesion and possesses substantial adhesion of the matrix to the material acting as the reinforcement or substrate. A method for making such a composite comprises the unique deployment of a perfluoropolymer directly onto the substrate in a relatively small amount sufficient to protect the substrate from chemical corrosion without impairing flexibility, followed by the application of the overcoat layer.

15 Claims, 5 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 3

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	RWC	Draw. Desc	Image
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☒ 2. Document ID: US 5217797 A

L1: Entry 2 of 2

File: USPT

Jun 8, 1993

US-PAT-NO: 5217797

DOCUMENT-IDENTIFIER: US 5217797 A

TITLE: Chemically resistant diaphragm

DATE-ISSUED: June 8, 1993

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Knox; John B.	Wilmington	DE		
Connelly, Jr.; John M.	Rising Sun	MD		

US-CL-CURRENT: 428/167; 428/421, 428/422, 442/334, 442/397, 92/103F, 92/103SD

## ABSTRACT:

A composite diaphragm containing a flexible composite of a flexible polymer and an expanded polytetrafluoroethylene fabric on which is adhered to one surface a solid polytetrafluoroethylene layer. Additionally a composite diaphragm is disclosed which has a concentrically arranged ribbed elastomeric layer attached to a solid polytetrafluoroethylene layer.

13 Claims, 5 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 2

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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